



Dialogic® SS7HDC Boards

Installation Guide

Copyright © 2004-2007 Dialogic Corporation. All rights reserved.

1. Product Description

Dialogic® SS7HDCQ16W, SS7HDCD16W, SS7HDCS8W, and SS7HDCN16W boards (collectively, "SS7HDC boards" or "boards") are high-density, high-performance, multi-port, SS7 signaling interface boards designed for use in telecommunications environments.

The boards have quad, dual, single and no signal processors and support multiple HDLC-based signaling channels, including up to 128 SS7 links that can operate at 64, 56, and 48 kbits/s. The boards are 64-bit CompactPCI boards and operate with Rear Transition Modules (RTMs) that provide external connections.

The SS7HDCN16W, SS7HDCD16W, SS7HDCS8W, and SS7HDCQ16W main boards include the following:

Board Extractors: With red locking tabs.

Retaining Screws: Secure board to the chassis.

Power Indicator: A green LED that indicates power is applied.

User Indicators: Four red LEDs that are available for general purpose use in user applications.

Hot Swap Indicator: A blue LED that indicates the board can safely be removed from a live system.

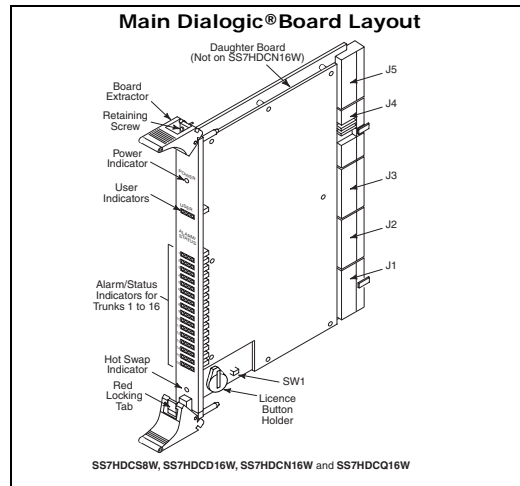
License Button Holder: A holder for a software license button, a device used to enable the software running on the board.

SW1: A switch used to set the board address.

J1 to J5: Connections to CompactPCI backplane.

Daughter Board: Contains the signal processor(s). Not included on the SS7HDCN16W.

Alarm/Status Indicators: A set of four LEDs for each trunk. The red Loopback LED when lit indicates that the respective trunk is in loopback mode. The green, yellow and red LEDs indicate normal operation or Carrier Failure Alarms (CFAs) as follows:



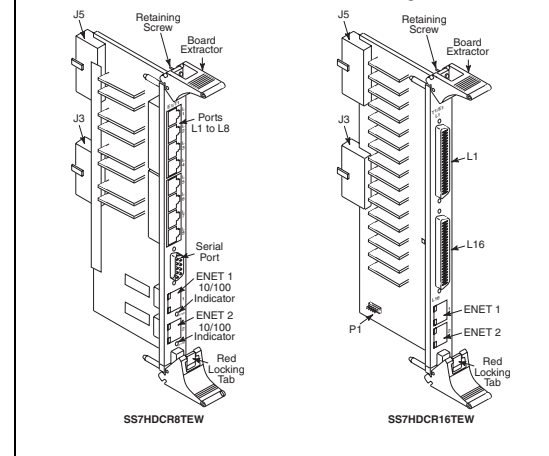
Green	Yellow	Red	Conditions
ON	OFF	OFF	Normal Operation
OFF	OFF	ON	Loss of Signal (LOS)
ON	OFF	ON	Red Alarm
ON	ON	OFF	Yellow Alarm/Remote Alarm Indicator (RAI)
ON	ON	ON	Alarm Indicator Signal (AIS)

RTMs support different interface options. While all main boards interoperate with all RTMs, the following table shows the most logical combinations depending on the interface requirements.

Required Interface	Main Dialogic® Board	RTM
8 T1/E1 ports	SS7HDCQ16W SS7HDCD16W SS7HDCS8W	SS7HDCR8TEW
16 T1/E1 ports	SS7HDCQ16W SS7HDCD16W SS7HDCN16W	SS7HDCR16TEW

Part number: 64-0067-02

Rear Transition Module Layout



Note: The main board can also operate without an RTM if the signaling is routed via the CT Bus.

All RTMs include the following:

Board Extractors: With red locking tabs.

Retaining Screws: Secure the RTM to the chassis.

J3, J5: Connections to the CompactPCI backplane.

ENET 1, 2: Connections to 10/100 BASE-TX Ethernet networks.

The SS7HDCR8TEW RTM includes:

Ports L1 to L8: Connections for 8 T1/E1 cables.

Serial Port: Reserved for future use.

10/100 Indicator (2): Green LEDs that indicate the type of Ethernet operation on each port:
 - On indicates 100BaseT
 - Off indicates 10BaseT

The SS7HDCR16TEW RTM includes:

L1, L16: Connections for 16 T1/E1 cables.

P1: Reserved for future use.

Additional Information

Additional information about SS7HDC boards and the specifications to which they conform is available in the following documents:

- The *Regulatory Notices* document, packed with each SS7HDC board, contains safety warnings and international and national requirements for proper installation and operation of telecommunications equipment.
- *SS7HD Programmer's Manual*, available at <http://www.dialogic.com/support/helpweb/signaling>, provides information about the software used with the boards, including configuration parameters and command descriptions.
- The product data sheet, available at <http://www.dialogic.com/products/list.asp>, provides a functional description as well as information about applications and configurations, features, and technical specifications.

- The latest software, available at <http://www.dialogic.com/support/helpweb/signaling>
- *ECTF H, 110 Hardware Compatibility Specification: CT Bus* available at <http://www.ectf.org>.
- *PCI Local Bus Specification Rev 2.1* available at <http://www.pcisig.org>.
- The following PICMG specifications:
 - *PICMG 2.0 R3.0 CompactPCI core specification*
 - *PICMG 2.1 R2.0 CompactPCI hot swap specification*
 - *PICMG 2.5 R1.0 CompactPCI computer telephony specification*
 - *PICMG 2.16 R1.0 CompactPCI packet switching backplane specification*
 All of these documents are available at <http://www.picmg.org>.

2. Before You Begin

Familiarize yourself with the safety aspects and other essential or national requirements in the *Regulatory Notices* document.

Protecting the Board from Damage

CAUTION: All computer boards are sensitive to electrostatic discharge (ESD). Handle all static-sensitive boards and components at a static-safe work area, and observe anti-static precautions at all times.

If you are not familiar with electrostatic discharge (ESD) safety precautions, visit <http://www.dialogic.com/support/hwinstall/esd.pdf> to learn more.

Unpacking the Board

CAUTION: Do not remove the board from the anti-static packaging until you are ready to install it. Observe proper anti-static precautions at all times.

Inspect the packaging for any signs of damage that may have occurred during transit. In the event of damage or missing items notify both the carrier and the supplier immediately.

Software License Button

All Dialogic® SS7 protocol software running on the board is enabled by a removable software license button. Prior to installing the board, the correct license button must be fitted.

Note: SS7HDCN16W boards are line interface boards only and do not require a software licence button for operation.

The license button may be supplied in a separate package and therefore may require installation.

To install the license button, locate the license button holder (see the Main Board Layout figure) and carefully slide the button into the holder ensuring that the contacts of the holder make good contact with the button casing.

The software enabled by the license button is indicated by a symbol engraved in the top of the button casing.

3. Configuring the Board

SS7HDC boards include one hardware configurable component, the SW1 switch. This switch can be used to set the board address, but is normally set to 0.

Software configurable parameters must be set, as described in the *SS7HD Programmer's Manual*. These include parameters relating to T1/E1 ports, pulse shape, line code and frame format.

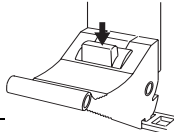
4. Installing or Replacing the Main Board and RTM

CAUTION: These procedures assume familiarity with the general terminology associated with electronic equipment and with the safety practices and regulatory compliance required for using and modifying electronic equipment. These procedures should be performed only by qualified technical personnel.

CAUTION: All computer boards are sensitive to electrostatic discharge. Handle all static-sensitive boards and components at a static-safe work area, and observe anti-static precautions at all times.

CAUTION: CompactPCI backplane pins are bent easily. Make sure that the board or RTM is seated correctly with hand pressure before fully seating the board or RTM. If the extractors are used to seat the board or RTM, make sure to seat evenly.

CAUTION: When removing the main board or RTM, to avoid damage to extractors, press the red locking tabs before applying pressure to the board extractor.



WARNING! Before removing an RTM or blanking panel, disconnect all telecommunications, network, or serial port links from the RTM and any adjacent RTMs.

Installation in a "Cold" Chassis

The procedure for installing the main board in the front of the chassis and the RTM in the rear of the chassis is the same, with the condition that the RTM must be positioned directly opposite the main board.

Install the main board or RTM as follows:

1. Select an empty peripheral expansion bus slot.
2. Remove the blanking panel.
3. Use the slot's board guides as you insert the board or RTM into the chassis. Make sure that the tabs on the board or RTM extractors engage the guide holes in the chassis cage, then lock down the board extractors until the red locking tabs snap shut.
4. Tighten the retaining screws to secure the board or RTM firmly in the chassis slot.
5. Fit blanking panels in any unused slots.

Removal from a "Cold" Chassis

Removal of the main board or RTM is a simple case of loosening the retaining screws, unlocking the extractors, using the extractors to disengage the main board or RTM connectors from the backplane, and sliding out of the chassis. See the CAUTION above about the use of locking tabs. If not replacing the main board or RTM, then fit blanking panels.

Replacement by "Hot-Swap"

The procedure for "Hot-Swap" replacing the RTM and the main board is similar to the removal and installation in a "cold" chassis, but note the following:

- When removing the main board, push down on the red locking tabs to unlock the extractors, then wait for the blue Hot-Swap indicator to light before pushing evenly on both extractors to disengage the main board from the backplane.
- When installing the main board, as the board connectors engage with the backplane connectors, the blue Hot-Swap indicator is lit. As the card is fully inserted, the indicator will extinguish.
- If replacing the RTM only:
 - Remove the main board, before removing the RTM.
 - Install the new RTM first, then re-install the main board.

5. Connecting to External Equipment

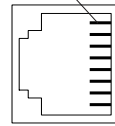
Connecting T1 or E1 Cables

Note: All T1 or E1 cables must be twisted pair, shielded, and grounded at both ends.

On the SS7HDCR8TEW RTM, connect T1 or E1 cables to the T1/E1 connectors. Pinouts for T1/E1 connectors are shown in the following figure.

T1/E1 Connector Pinouts

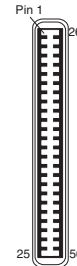
Pin	Function
1	RCV_RING
2	RCV_TIP
3	N/C
4	XMIT_RING
5	XMIT_TIP
6	N/C
7	N/C
8	N/C



On the SS7HDCR16TEW RTM, connect T1 or E1 cables to the L1 and/or L16 connectors. Pinouts for L1, the upper connector corresponding to ports 1 to 8, are shown in the following figure. Pinouts for L16, the lower connector, are similar but correspond to ports 9 to 16.

L1 Connector Pinouts

Pin	Function	Pin	Function
1	Rx Ring 1	26	Rx Tip 1
2	Tx Ring 1	27	Tx Tip 1
3	N/C	28	N/C
4	Rx Ring 2	29	Rx Tip 2
5	Tx Ring 2	30	Tx Tip 2
6	N/C	31	N/C
7	Rx Ring 2	32	Rx Tip 3
8	Tx Ring 3	33	Tx Tip 3
9	N/C	34	N/C
10	Rx Ring 4	35	Rx Tip 4
11	Tx Ring 4	36	Tx Tip 4
12	N/C	37	N/C
13	Rx Ring 5	38	Rx Tip 5
14	Tx Ring 5	39	Tx Tip 5
15	N/C	40	N/C
16	Rx Ring 6	41	Rx Tip 6
17	Tx Ring 6	42	Tx Tip 6
18	N/C	43	N/C
19	Rx Ring 7	44	Rx Tip 7
20	Tx Ring 7	45	Tx Tip 7
21	N/C	46	N/C
22	Rx Ring 8	47	Rx Tip 8
23	Tx Ring 8	48	Tx Tip 8
24	N/C	49	N/C
25	N/C	50	N/C



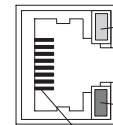
Note: A breakout box, BOB32T1E1W, is available to use as part of the system cabling. The breakout box provides the same T1/E1 interface as the SS7HDCR8TEW RTM.

Connecting an Ethernet Cable

On all RTMs, connect a shielded Ethernet cable to one of the ENET connectors. Pinouts for the ENET connectors are shown in the following figure.

ENET Connector Pinouts

Pin	Function
1	RD+
2	RD-
3	TD+
4	N/C
5	N/C
6	TD-
7	N/C
8	N/C



6. After Installing the Board

After installing the board, refer to the software installation instructions in the *SS7HD Programmer's Manual*. Ensure that the configuration is compliant with all local requirements.

7. Returning a Product

To return a board for warranty repair or any other returns, please refer to the following: <http://www.dialogic.com/support/hwfaults>.

All contents of this document are furnished for informational use only and are subject to change without notice and do not represent a commitment on the part of Dialogic Corporation or its subsidiaries ("Dialogic"). Reasonable effort is made to ensure the accuracy of the information contained in the document. However, Dialogic does not warrant the accuracy of this information and cannot accept responsibility for errors, inaccuracies or omissions that may be contained in this document.

INFORMATION IN THIS DOCUMENT IS PROVIDED IN CONNECTION WITH DIALOGIC® PRODUCTS. NO LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE, TO ANY INTELLECTUAL PROPERTY RIGHTS IS GRANTED BY THIS DOCUMENT EXCEPT AS PROVIDED IN A SIGNED AGREEMENT BETWEEN YOU AND DIALOGIC. DIALOGIC ASSUMES NO LIABILITY WHATSOEVER, AND DIALOGIC DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY, RELATING TO SALE AND/OR USE OF DIALOGIC PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR INFRINGEMENT OF ANY INTELLECTUAL PROPERTY RIGHT OF A THIRD PARTY. Dialogic products are not intended for use in medical, life saving, life sustaining, critical control or safety systems, or in nuclear facility applications.

It is possible that the use or implementation of any one of the concepts, applications, or ideas described in this document, in marketing collateral produced by or on web pages maintained by Dialogic may infringe one or more patents or other intellectual property rights owned by third parties. Dialogic does not provide any intellectual property licenses with the sale of Dialogic products other than a license to use such product in accordance with intellectual property owned or validly licensed by Dialogic and no such licenses are provided except pursuant to a signed agreement with Dialogic. More detailed information about such intellectual property is available from Dialogic's legal department at 9800 Cavendish Blvd., 5th Floor, Montreal, Quebec, Canada H4M 2V9. Dialogic encourages all users of its products to procure all necessary intellectual property licenses required to implement any concepts or applications and does not condone or encourage any intellectual property infringement and disclaims any responsibility related thereto. These intellectual property licenses may differ from country to country and it is the responsibility of those who develop the concepts or applications to be aware of and comply with different national license requirements. Dialogic, Diva, Eicon, Eicon Networks, Eiconcard, Dialogic Pro and SIPcontrol, among others, are either registered trademarks or trademarks of Dialogic. Dialogic's trademarks may be used publicly only with permission from Dialogic. Such permission may only be granted by Dialogic's legal department at 9800 Cavendish Blvd., 5th Floor, Montreal, Quebec, Canada H4M 2V9. Any authorized use of Dialogic's trademarks will be subject to full respect of the trademark guidelines published by Dialogic from time to time and any use of Dialogic's trademarks requires proper acknowledgement. The names of actual companies and products mentioned herein are the trademarks of their respective owners.